

**What is claimed is:**

1           1. A fluid analyzing apparatus for sequentially  
2 analyzing a multiplex fluid sample, comprising:

3           a first unit having a fluid inlet, a first upper  
4           portion and a fluid outlet, wherein the first  
5           upper portion is formed on the lower part of  
6           the first unit, the multiplex fluid sample  
7           flowing into the fluid analyzing apparatus via  
8           the fluid inlet and flowing out of the fluid  
9           analyzing apparatus via the fluid outlet;

10          a second unit disposed under the first unit and  
11          having a pipeline, a first lower portion and a  
12          second upper portion, wherein the first lower  
13          portion is formed on the upper part of the  
14          second unit and corresponds to the first upper  
15          portion to combine the first upper portion to  
16          form a first target chamber, the second upper  
17          portion is formed on the lower part of the  
18          second unit, and the pipeline is sequentially  
19          connected to the fluid inlet, first lower  
20          portion, second upper portion and fluid outlet;

21          a third unit disposed under the second unit and  
22          having a second lower portion, wherein the  
23          second lower portion is formed on the upper  
24          part of the third unit and corresponds to the  
25          second upper portion to combine the second  
26          upper portion to form a second target chamber;

27           a first analyzing element disposed in the first  
28           target chamber to analyze and detect the  
29           multiplex fluid sample; and

30           a second analyzing element disposed in the second  
31           target chamber to analyze and detect the  
32           multiplex fluid sample.

1           2. The fluid analyzing apparatus as claimed in  
2           claim 1, wherein the pipeline of the second unit is  
3           sequentially connected to the fluid inlet, first lower  
4           portion, second upper portion and fluid outlet with an  
5           inclined angle.

1           3. The fluid analyzing apparatus as claimed in  
2           claim 1, further comprising a first sealing element  
3           disposed between the first upper portion and first lower  
4           portion to prevent leakage of the multiplex fluid sample  
5           from the first target chamber.

1           4. The fluid analyzing apparatus as claimed in  
2           claim 1, further comprising a second sealing element  
3           disposed between the second upper portion and second  
4           lower portion to prevent leakage of the multiplex fluid  
5           sample from the second target chamber.

1           5. The fluid analyzing apparatus as claimed in  
2           claim 1, wherein the first analyzing element further  
3           comprises a first signal connecting portion extending out  
4           of the fluid analyzing apparatus.

1           6. The fluid analyzing apparatus as claimed in  
2           claim 1, wherein the second analyzing element further

3 comprises a second signal connecting portion extending  
4 out of the fluid analyzing apparatus.

1 7. The fluid analyzing apparatus as claimed in  
2 claim 1, wherein the first and second analyzing elements  
3 are physical or/and biological or/and chemical sensing  
4 elements.

1 8. The fluid analyzing apparatus as claimed in  
2 claim 7, wherein the physical sensing element is an  
3 electrode, a quartz crystal microbalance (QCM), a  
4 flexural plate wave (FPW) device, a thermal sensing  
5 element, a pressure sensing element, an optical sensing  
6 element or a viscosity sensing element.

1 9. The fluid analyzing apparatus as claimed in  
2 claim 7, wherein the biological sensing element is a  
3 nucleic acid, protein, antibody, enzyme, microorganism or  
4 other biochemical substances.

1 10. The fluid analyzing apparatus as claimed in  
2 claim 1, further comprising at least one bolt to combine  
3 the first, second and third units.

1 11. The fluid analyzing apparatus as claimed in  
2 claim 1, wherein the first, second and third units are  
3 composed of acrylic, Teflon or glass.

1 12. The fluid analyzing apparatus as claimed in  
2 claim 1, further comprising a pump to pump the multiplex  
3 fluid sample into the fluid analyzing apparatus.

1           13. The fluid analyzing apparatus as claimed in  
2 claim 1, wherein the multiplex fluid sample is  
3 respectively analyzed or detected by the first and second  
4 analyzing elements.

1           14. A fluid analyzing apparatus for simultaneously  
2 analyzing a multiplex fluid sample, comprising:

3           a first unit having a fluid inlet and a dispersing  
4           portion disposed on the lower part of the first  
5           unit and connected to the fluid inlet, wherein  
6           the multiplex fluid sample flows into the  
7           dispersing portion via the fluid inlet;

8           a second unit disposed under the first unit and  
9           having a first pipeline, a second pipeline, a  
10          first upper portion, a second upper portion and  
11          a collective portion, wherein the first upper  
12          portion, second upper portion and collective  
13          portion are formed on the lower part of the  
14          second unit, the first pipeline is connected to  
15          the dispersing portion of the first unit, first  
16          upper portion and collective portion, and the  
17          second pipeline is connected to the dispersing  
18          portion of the first unit, second upper portion  
19          and collective portion;

20          a third unit disposed under the second unit and  
21          having a first lower portion, a second lower  
22          portion and a fluid outlet, wherein the first  
23          lower portion is formed on the upper part of  
24          the third unit and corresponds to the first  
25          upper portion to combine the first upper

26 portion to form a first target chamber, the  
27 second lower portion is formed on the upper  
28 part of the third unit and corresponds to the  
29 second upper portion to combine the second  
30 upper portion to form a second target chamber,  
31 the fluid outlet is connected to the collective  
32 portion of the second unit, and the multiplex  
33 fluid sample flows out of the fluid analyzing  
34 apparatus via the fluid outlet;

35 a first analyzing element disposed in the first  
36 target chamber to analyze and detect the  
37 multiplex fluid sample; and

38 a second analyzing element disposed in the second  
39 target chamber to analyze and detect the  
40 multiplex fluid sample.

1 15. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the first pipeline of the second unit  
3 is connected to the dispersing portion of the first unit,  
4 first upper portion and collective portion with an  
5 inclined angle, and the second pipeline of the second  
6 unit is connected to the dispersing portion of the first  
7 unit, second upper portion and collective portion with  
8 the same inclined angle.

1 16. The fluid analyzing apparatus as claimed in  
2 claim 14, further comprising a first sealing element  
3 disposed between the first upper portion and first lower  
4 portion to prevent leakage of the multiplex fluid sample  
5 from the first target chamber.

1           17. The fluid analyzing apparatus as claimed in  
2 claim 14, further comprising a second sealing element  
3 disposed between the second upper portion and second  
4 lower portion to prevent leakage of the multiplex fluid  
5 sample from the second target chamber.

1           18. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the first analyzing element further  
3 comprises a first signal connecting portion extending out  
4 of the fluid analyzing apparatus.

1           19. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the second analyzing element further  
3 comprises a second signal connecting portion extending  
4 out of the fluid analyzing apparatus.

1           20. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the first and second analyzing elements  
3 are physical or/and biological or/and chemical sensing  
4 elements.

1           21. The fluid analyzing apparatus as claimed in  
2 claim 20, wherein the physical sensing element is an  
3 electrode, a quartz crystal microbalance (QCM), a  
4 flexural plate wave (FPW) device, a thermal sensing  
5 element, a pressure sensing element, an optical sensing  
6 element or a viscosity sensing element.

1           22. The fluid analyzing apparatus as claimed in  
2 claim 20, wherein the biological sensing element is a  
3 nucleic acid, protein, antibody, enzyme, microorganism or  
4 other biochemical substances.

1           23. The fluid analyzing apparatus as claimed in  
2 claim 14, further comprising at least one bolt to combine  
3 the first, second and third units.

1           24. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the dispersing portion of the first  
3 unit is circular.

1           25. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the first, second and third units are  
3 composed of acrylic, Teflon or glass.

1           26. The fluid analyzing apparatus as claimed in  
2 claim 14, further comprising a pump to pump the multiplex  
3 fluid sample into the fluid analyzing apparatus.

1           27. The fluid analyzing apparatus as claimed in  
2 claim 14, wherein the multiplex fluid sample is  
3 respectively analyzed or detected by the first and second  
4 analyzing elements.  
5